



Nongame and Endangered Wildlife Program

Division of Fish and Wildlife

Indiana Department of Natural Resources

September 1998 - August 1999



What is the Nongame and Endangered Wildlife Program?

The Nongame and Endangered Wildlife Program is part of the Division of Fish and Wildlife's Habitat and Diversity Protection Unit. The main goal of the Indiana Nongame and Endangered Wildlife Program (NEWP) is to protect and manage more than 550 species of nongame and endangered wildlife in the state. Information on NEWP is available online at www.dnr.state.in.us/fishwild/index.htm.

Funding

NEWP fund

The state income tax checkoff remains the primary source of income for NEWP and the only checkoff on the state income tax form. As of August 31, 1999, revenue for the Nongame and Endangered Wildlife Fund from the 1998 tax season was \$378,500. Over the last ten years, Hoosiers donated a yearly average of \$394,638 to the fund. Direct donations received during the time frame of this report totaled \$4,717.95.

River otter sponsorship program

The river otter sponsorship program was developed to raise funds for the purchase of river otters for restoration in the state. Sponsorships range from \$25 - \$500. Corporations, schools, conservation organizations and hundreds of individuals sponsored otters. Since the spring of 1996, the otter sponsorship program has raised \$53,886.98. Sponsorships paid for the purchase and upkeep of 108 of the 303 river otters released from 1995-1999. The remaining expenses for the project are paid by donations to the income tax checkoff, direct donations, or proceeds from otter hat and t-shirt sales from the Indiana State Trappers Association.



Hellbender - state endangered



Sandhill cranes at Jasper-Pulaski FWA



Allegheny woodrat - state endangered

Administrative Rules

The Divisions of Law Enforcement and Fish and Wildlife, in coordination with interested individuals and organizations, developed final rules to protect Indiana's native reptiles and amphibians and provide for public safety. This new rule (312 IAC 9), effective August 8, 1999, replaces previously promulgated emergency rules. All of Indiana's native reptiles and amphibians, their parts, eggs and offspring, are now protected by law. The purchase or sale of Indiana's native reptiles and amphibians is prohibited. Exemptions are made for certain educational institutions, zoological parks, and holders of a reptile captive breeders license.

Bullfrog and green frog tadpoles may be sold by holders of a fish haulers and suppliers license or aquaculture permit. The young of eight species of native snakes (defined by a species-specific length prescribed in the rule) may be sold by holders of a reptile captive breeding license. In addition, albinistic, leucistic and xanthic specimens of Indiana's native species may also be sold.

Indiana residents over the age of 17 may not collect amphibians or reptiles from the wild unless they have a valid hunting or fishing license. For all collectors, there is a possession limit of four on all nongame species **except** endangered species. Endangered species are protected from collection under state law. The common snapping turtle, smooth softshell turtle, spiny softshell turtle, bullfrog and green frog are regulated as game animals with specified methods of take, bag limits, and seasons. A wild animal possession permit and special confinement parameters are required for individuals owning crocodilians five feet or more in length or a venomous reptile.

A copy of the new regulations can be obtained by writing to the Division of Fish and Wildlife.



The endangered spotted turtle is protected from collection by state law.

Land Acquisition

Pisgah Marsh

One hundred and seventy acres were added to the original Pisgah Marsh property (approximately 100 acres) in Kosciusko County. The property line of the original parcel ran down the middle of a large marsh. The land purchased this year includes the rest of the marsh and a considerable amount of upland buffer and small restorable wetlands. The marsh areas and surrounding uplands support a variety of waterfowl and wading birds, nesting sandhill cranes, spotted turtles, and massasauga rattlesnakes.

The Endangered Wildlife Fund provided 90 percent of the cost of the property (\$485,500). The property is managed for nongame species and other compatible uses. One small wetland on the property was restored by disrupting its underlying tile system.

Carter Woods

NEWP acquired 108 acres of bottomland hardwoods bordering the White River in southern Knox County in 1999. This tract supports a remnant population of the state endangered swamp rabbit. It is part of a larger complex of adjacent bottomland hardwoods that constitute one of the few remaining core areas for this species in Indiana. Currently, the swamp rabbit is considered the most endangered mammal in the state.

Planning

Work Plans

NEWP staff developed work plans for projects planned for implementation in the 2001-2003 budget. Work plans outline objectives, methods, personnel, a time line and budget for each project. They are based on objectives developed for NEWP in its five year Nongame and Endangered Wildlife Strategic Plan.

A copy of the strategic plan can be obtained from the Division of Fish and Wildlife.

Eco-regional Planning

NEWP staff are involved in The Nature Conservancy's new ecoregional planning initiative. This initiative identifies target species and important sites within various ecoregions across the country to aid in land protection planning. NEWP biologists are involved in planning efforts for the Interior Lowland Plateau and North Central Tillplain ecoregions.

Teaming With Wildlife

The Conservation and Reinvestment Act of 1999 (CARA) was reintroduced in Congress in early 1999 as House bill H.R. 701 and Senate bill S. 25. It is expected to move out of Congressional committees for a vote in October, 1999. CARA proposes that funds derived from off-shore oil and gas royalties are invested in wildlife.

Title III of both bills contains the goals of Teaming With Wildlife (TWW). This title provides funding for the conservation of a diverse array of wildlife and associated habitats, including species that are not hunted or fished. CARA funds can also support wildlife-associated education and wildlife-related recreation.

Senator Evan Bayh co-sponsored CARA, S.25, in the Senate. As a member of the Senate Energy and Natural Resources Committee, he is in a position to craft the final bill. In the House, Indiana Representatives Julia Carson and Tim Roemer are co-sponsors of CARA, H.R. 701.

Support for this legislation increases in Indiana, with a coalition of more than 80 groups supporting CARA. The coalition consists of environmental groups, sportsmen's clubs, land trusts, parks departments, businesses and tourism and convention organizations. Members' activities include contacting members of Congress and meeting with them when they return to their Indiana districts.

Revenue for the Indiana Department of Natural Resources from all three titles of this legislation would be approximately \$11 million per year. The Division of Fish and Wildlife would receive between \$5 - \$6 million from Title III alone. Wildlife that could become endangered can be studied and managed for survival.

The Indiana Division of Fish and Wildlife is working on a plan for using these funds. Input was sought from a variety of sources, including but not limited to: the Indiana Division of Nature Preserves, other land-holding divisions of IDNR, the academic community, Division of Fish and Wildlife professionals and Teaming with Wildlife Coalition members. Suggestions and background information provided by a committee of the International Association of Fish and Wildlife Agencies contributed to the planning process. A state plan cannot be fully developed, however, until the federal guidelines for CARA are written.

Media & Education

Media coverage

Media from around the state covered field projects on river otters, endangered darters, freshwater mussels, bald eagles and peregrine falcons. These events resulted in numerous newspaper articles and television reports regarding NEWP projects and animals. The syndicated television program "Game Warden Wildlife Journal" filmed river otter, bald eagle and peregrine falcon segments with NEWP. The river otter segment aired in spring, 1999. The two raptor programs are scheduled to air in fall, 1999.

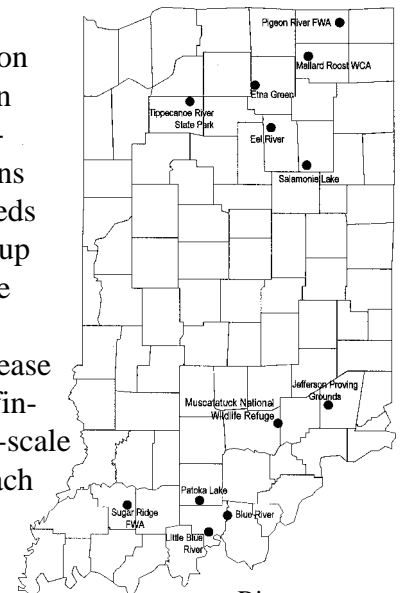
Educational programs

Education programs on Indiana's endangered wildlife were given throughout the year to schools and organizations. A public information meeting regarding this year's Blue River otter releases was held in January, 1999. A day long aquatic education program held at the Goose Creek Academy taught students about aquatic ecosystems. This is the fourth year for this particular program.

Restoration Project Updates

River Otters

Native populations of river otters in Indiana declined sharply by the late 1800s and were believed extirpated from the state by 1942. The Indiana river otter reintroduction program was created in 1995 with a goal of restoring otter populations in six priority watersheds through the release of up to 325 otters during the 1995-1999 period. In February 1999, the release phase of the program finished with the last full-scale releases of 23 otters each on the Blue River and Little Blue River in southern Indiana. An additional six otters released in 1999 at Jefferson Proving Grounds augmented those animals released at this site in 1996.



River otter
release sites

Since 1995, 303 otters (184M:119F) obtained from Louisiana were released at 12 sites in the six priority watersheds. Thirty-two (25M:7F) of these animals (11 percent) are known to have died since their release. Road-kills and incidental trapping have accounted for 72 percent of the known mortalities. A combination of aerial winter track surveys, bridge/stream surveys, observations, and biological data from recovered animals is used to monitor the post-release status and distribution of otters in Indiana. While activity remains within 10-15 miles of the original release sites, otters occupy adjacent stretches of river and associated tributaries and expanded into watersheds not originally targeted for restoration, such as the Kankakee River in northwest Indiana. As a result of the releases, otters occupy portions of watersheds in 26 counties. Another measure of success is production of young by reintroduced animals. There is confirmed or suspected evidence of reproduction at eight of the 10 sites where otters were released prior to 1999. Otters at several sites, such as Muscatatuck National Wildlife Refuge and the Tippecanoe River watershed, produced litters for several successive seasons.

Copies of the 1996, 1997, and 1998 river otter reintroduction program reports are available upon request.

Peregrine Falcons

Eight nesting pairs were again present in Indiana during 1999: five at industrial sites along Lake Michigan, one at a power plant in Jasper County (30 miles south of Lake Michigan), and two in urban areas (Indianapolis, Fort Wayne). In addition, another pair established a territory in Kokomo with copulations and nest box visits noted, but no egg-laying. No turnover in adults occurred in established pairs. Two pairs shifted nest sites. Seven of the eight nests successfully fledged a record 24 chicks. All but three chicks were banded. Of the Midwestern states, only Minnesota and Wisconsin produced more peregrines this year than Indiana. Five additional nest boxes were erected in Indiana, primarily at electric power plants. The following table presents a history of peregrine falcon nesting in Indiana.

The peregrine falcon was removed from the federal endangered species list in August, 1999. The peregrine remains on the state endangered list and NEWP continues to monitor the population.

Peregrine falcon nesting in Indiana

Location	Year										
	89	90	91	92	93	94	95	96	97	98	99
Cline Ave., E. Chicago	3	2	1	4	4	5	2	3	2	1	4
Gary		≥1	2	2	2a	3	2	3	2	3	4
Indianapolis							4	4	3	4	3
Inland Steel, E. Chicago							?	2	2	1	3
Fort Wayne								2	4	3	4
Burns Harbor/Porter								2	0	2	4
Michigan City								0	2	0	0
Wheatfield										1	2
Totals	3	≥3	3	6	6a	8	8	16	15	15	24

(a) Includes 1 chick fostered into nest

Bald Eagles

The number of known or suspected nesting pairs of bald eagles numbered 21 in 13 Indiana counties during 1999, with a record 20 pairs laying eggs. Three previously unknown nests were discovered this year. Production from 12 successful nests resulted in a near-record 19 eaglets reaching flight stage. For the first time, not all the eaglets were banded. Seven eaglets at four nests were banded for the benefit of the media. A helicopter survey in early June proved successful in determining production. Biologists continue work with public land managers and private landowners who have eagle nests on their property to insure successful nesting. The table below presents a history of bald eagle nesting in Indiana.

Bald eagle nesting in Indiana

Year	Nesting Territories	Attempts	Successful Nests	Young Fledged
1989	2	1	0	0
1990	2	1	0	0
1991	5	3	2	3
1992	10	5	3	5
1993	12	9	4	7
1994	12	11	4	7
1995	15	13	11	17
1996	17	14	11	15
1997	18	15	9	13
1998	19	15	11	28
1999	21	20	12	19

The 1999 Midwinter Eagle Count found 100 bald eagles in Indiana, the third straight year of declines. Weather conditions decreased the likelihood of a large winter population, with a mild fall and early winter followed by a sudden change to frigid conditions at the time of the survey.

In July, 1999, the bald eagle was proposed for delisting from the federal endangered species list. A final decision on its removal will be reached in 2000. The bald eagle is still considered a state endangered species.

Research and Surveys

This section, which discusses NEWP's research and surveys, is meant to provide a quick source of information. More formal reports may be developed. Any information and/or preliminary results provided are subject to further analysis and therefore are not for publication without permission.

Mussels

Endangered mussel monitoring and recovery in the Ohio River

The Ohio River is home to at least 40 species of native freshwater mussels. These populations are currently under attack by the exotic zebra mussel. Monitoring zebra mussel infestation rates and native mussel mortality began in 1995 at four sites along the Indiana border. Over the first four years of the study, live zebra mussel density increased at three of the sites, while native mussel density decreased. At the Aurora mussel bed (ORM 496), native mussel density decreased from 6.4 live mussels/m² in 1995 to 1.0 live mussels/m² in 1997. During the same time, live zebra mussel biomass increased from 588 g/m² to 5345g/m² (almost 11 pounds).

Freshwater mussel survey of selected Indiana natural lakes

Several species of freshwater mussels are adapted for life in natural lake habitats. Historical reports indicate that freshwater mussel diversity was possibly high in several of Indiana's natural lakes. However, the present distribution of freshwater mussels in northern Indiana's natural lakes is unknown. A survey of these habitats was initiated last year and continues through next field season. Approximately 75 lakes were sampled to date and populations of two special concern species (wavy-rayed lampmussel and rayed bean) were found. Almost every lake sampled has evidence of mussel presence. Additional sampling of these habitats can provide valuable distributional information for several of Indiana's rarer freshwater mussel species.

Fish

Lake sturgeon studies in the East Fork White River

The East Fork White River is the site for an ongoing study of lake sturgeon populations. Over the

past four years, thirty different lake sturgeon were captured, ranging in size from 19 to 97 pounds and 3'10" to 6'7" in total length. All sturgeon were captured using a method perfected during the first year of collecting. During the first two years of the study, all lake sturgeon captured came from the same location. The 1998 and 1999 field seasons saw lake sturgeon captured at three new locations farther downstream. Future efforts focus on determining if lake sturgeon are spawning in the East Fork White River. Sampling additional river areas could reveal other lake sturgeon populations.



Future research may uncover lake sturgeon spawning areas in Indiana

Endangered darter survey

Currently seven species of darters (bluebreast, spotted, Tippecanoe, harlequin, gilt, spottail, variegate) are endangered in Indiana. Recent collections indicate that several are expanding their range within known watersheds, into new watersheds and even into areas from which they were thought to be extirpated. A three year survey, beginning last field season, was initiated to define the current range of each of these seven endangered species. Some of the major finds so far include Tippecanoe darters found in the Wabash River and spotted darters in the East Fork White River. Neither of these species were found in these drainages during previous collection efforts. Their presence in these locations represent substantial range expansions. Once the surveys are completed, the endangered status of each species will be reviewed.

Amphibians and Reptiles

Hellbender survey of the Blue River drainage

NEWP has studied the hellbender, a state endangered amphibian, since 1996. Forty-seven hellbenders were collected during the past three field seasons. Basic information of weight, length and sex was

collected from the individuals captured. This information helps determine the hellbender's status in the state. This year, marking of animals for individual identification began. Intensive surveys of one site revealed that attempts at reproduction are occurring. Continued efforts focus on determining if reproduction has been successful. Monitoring continues annually to determine population demographics.

Spatial Ecology of the Timber Rattlesnake in Southern Indiana

The timber rattlesnake is found in restricted areas of southern Indiana and is listed as a state endangered species. Little is known about habitat requirements for this species within the state. To find out more about their ecology, IUPUI-Fort Wayne, in cooperation with NEWP, has radio tracked individual snakes since 1996. In 1999, 15 snakes (9M:6F) were tracked from April to October. Locality information is being used to assess habitat selection and movement patterns. The findings from this study will identify sensitive areas, as well as provide information for management of the species in the state. In addition to the radio telemetry study, an effort is being made to mark all timber rattlesnakes found within the study area to obtain information concerning population demographics. Since 1996, 57 snakes (36M:21F) have been captured and marked, including 13 in 1999.

Birds

Survey and Management of Interior Least Terns

Since 1986 when a single nest was discovered, NEWP personnel have worked with Cinergy staff to monitor and manage the only nesting site for least terns in Indiana. Terns nest on gravel dikes and ash disposal areas at the Gibson Power Plant in extreme southwestern Indiana. Management consists of restricting access to minimize disturbance and controlling vegetation. Tern decoys are used to entice nesting and efforts are made to thwart mammalian predators.

Least tern numbers in 1999 were down from last year's record counts. The breeding population consisted of approximately 25 pairs. There were thirty-one nesting attempts with at least 19 chicks reaching fledgling stage. Trailmaster cameras used at two locations on the center dike identified potential predators. The ring-billed gull was the most common species encountered followed by great blue herons and

black-crowned night-herons. No mammals were observed. Wetland development as part of the North American Waterfowl Plan includes the construction of nesting islands for least terns beginning in the fall of 1999.

Nongame Bird Conservation Plans

Participation continued in various planning initiatives including Partners in Flight (Neotropical migrant landbirds), the U.S. Shorebird Conservation Plan, the North American Colonial Waterbird Conservation Plan, the USF&WS Ohio River Valley Ecosystem team, and the Important Bird Areas project. Each of these efforts has shown progress with a Bird Conservation Plan completed for the Interior Low Plateaus that includes the southern third of Indiana. The Nongame Bird Biologist became state co-coordinator for the federal Breeding Bird Survey and found cooperators to fill most of 16 new routes established in Indiana.

Survey of Loggerhead Shrikes

During 1988 and 1989, a comprehensive survey of loggerhead shrikes was conducted in Indiana with 98 nesting pairs known from 11 counties in 1989. The largest concentration of birds was found in a band from Daviess County south to Spencer and Warrick counties.



Loggerhead shrike populations are declining in Indiana

During 1999, areas in Daviess and Dubois counties were visited repeatedly to locate shrike territories. Shrikes were found at 26 locations with nesting confirmed or suspected at 20 sites. In these areas, populations appeared to have declined by >50 percent from the 1988-89 study. Land uses and habitats were qualitatively described and other birds were tallied at each site with shrikes. The presence of utility lines, gravel roads, barbed wire fences, fencerows with scattered deciduous shrubs and red cedars, grazed

pastures, and rural homesteads were common features at most locations with shrikes. Other areas with seemingly suitable habitat lacked loggerhead shrikes.

Feasibility Study of Reintroducing Greater Prairie-Chickens in Indiana

A review of the literature and contacts with prairie-chicken biologists were initiated to determine if suitable areas exist for the re-establishment of greater prairie-chickens in Indiana. Visits were made to view prairie-chicken management practices and habitats in southern Illinois. Illinois biologists traveled to Indiana to assess grasslands associated with reclaimed minelands. Some areas in west-central and southwestern Indiana offered good potential for prairie-chickens due to their large size, predominance of grasses, vegetative diversity, low populations of ring-necked pheasants, and close proximity to southern Illinois populations. The Kankakee Sands area of northwestern Indiana includes areas where prairie-chickens were last found in Indiana and >7,000 acres have been purchased by The Nature Conservancy. This area offers future habitat potential after it is restored to prairie vegetation, although high pheasant populations may preclude re-establishment of prairie-chickens.

Sandhill Crane Management

The peak fall population of staging sandhill cranes at Jasper-Pulaski Fish and Wildlife Area was 15,800 on 25 November 1998. This was 43 percent below the previous year's tally and the lowest count since 1993. A subcommittee of the Mississippi Flyway Council Technical Section is preparing a management plan for the eastern population of the sandhill crane. A state status report was prepared for this document. Indiana nesting records, fall migration numbers, and occurrences of sandhill cranes on May Day Bird Counts, Summer Bird Counts, and Christmas Bird Counts were summarized and published as "Status of Sandhill Cranes in Indiana" in the *Indiana Audubon Quarterly*.

As a result of increasing numbers, the Nongame Bird Technical Advisory Committee recommended removing the sandhill crane from the Indiana list of endangered species. State biologists are monitoring a proposal to establish a migratory flock of whooping cranes that would move through Indiana as they travel from Wisconsin to the Gulf Coast of Florida.

Colonial-nesting Waterbird Survey

Most nesting colonies of herons, egrets, gulls, and terns were surveyed in Indiana during 1998. A few that were missed were visited during the summer of 1999. A second colony of great egrets was discovered and the first nesting by double-crested cormorants in Indiana since the 1950s was documented at Gibson Lake. A black-crowned night-heron colony along Lake Michigan increased from the previous year. Breeding population estimates derived from the 1998-99 surveys are as follows: great blue heron (>120 colonies, >7,000 nests), great egret (2 colonies, approximately 10 pairs), black-crowned night-heron (2 sites; approximately 70 nests), cattle egret (1 colony, >15 nests), little blue heron (1 site, 2 nests), double-crested cormorant (1 nest), ring-billed gull (2 sites, >34,000 nests), herring gull (2 sites, 460 nests), Caspian tern (1 site, approximately 70 pairs), least tern (1 site, 25-42 pairs), and black tern (1 site, 1-2 pairs).

Mammals

Range Expansion of the Badger in Indiana

Nongame personnel completed analysis of the 1997 mail survey to determine the current status and distribution of badgers in Indiana. A total of 193 records of badgers or their sign was reported in 59 counties, an increase of 26 counties from a similar survey conducted in 1955. Occurrences of badgers in two additional counties were obtained from the Indiana Natural Heritage Program, resulting in 61 counties from which the species was reported during the 1994-1996 period. Information from additional data sources were used to obtain records for 21 counties not reported in the mail survey, resulting in a cumulative distribution map of badgers in 82 Indiana counties. A manuscript describing the current known range of badgers in the state is in preparation.



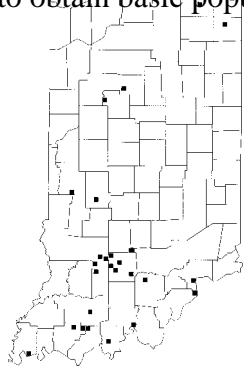
The state endangered American badger is expanding its range in Indiana.

Population Dynamics of the Allegheny Woodrat

In July 1998, a 3-year study was initiated at two localities to obtain demographic information (e.g., sex/age structure, survival, mortality) for the Allegheny woodrat in Indiana. Between July 1998 and August 1999, nongame personnel completed 11 monthly trapping sessions at the Tobacco Landing and Shelterhouse #2 woodrat sites bordering the Ohio River in Harrison County. A total of 46 woodrats (20M:26F) was captured 179 times in 1021 trap-nights. The number of individuals captured in each 2-night session ranged from 3 (March 1999 at Shelterhouse #2) to 17 (June 1999 at Tobacco Landing). Juvenile woodrats were trapped every month except for November and August, indicating multiple litters by some resident females. Monthly surveys continue at the two sites through June 2001 to obtain data necessary to determine the Allegheny woodrat's population dynamics in Indiana.

Population Study of Bobcats in Indiana

In December 1998, a multi-year study was initiated to obtain basic population parameters of the bobcat in south-central Indiana. Based on the distribution of confirmed reports, biologists identified a study area in northwest Lawrence County and initiated live-trapping efforts in December 1998. On 21 December, a 22-lb adult male bobcat was captured in a #3 Soft Catch foot-hold trap and was radio collared. Although trapping efforts continued on four properties in western Lawrence and eastern Martin counties until 1 April 1999 (2,583 trap-nights), no additional bobcats were captured. Weekly monitoring of the radioed male continued through the summer with more than 100 locations recorded. Live-trapping efforts to capture more bobcats begin in December 1999.



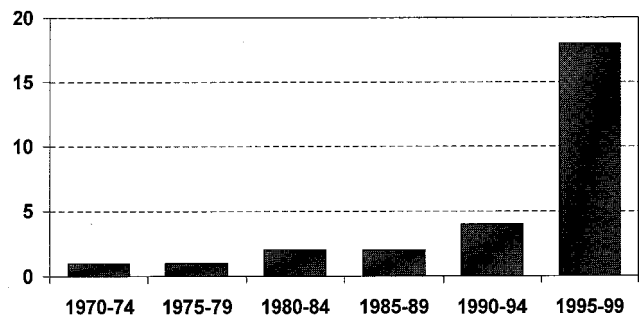
Location of confirmed bobcat reports, 1970 - present

Indiana Bobcat Report Database

Bobcats have been listed as a state endangered species since 1970, but evidence suggests that Indiana's bobcat population has increased in the last five years. Since 1970, 28 confirmed reports of bobcats were documented in 21 Indiana counties.

Eighteen (64 percent) of these reports have occurred since 1995. Recent confirmed reports include observations of adult cats on Crane NWSC (Martin County) and near Marble Hill (Clark County). Road-killed bobcats were also reported from Greene, Spencer, Carroll, and Warrick counties. An adult cat was also captured and released from a foot-hold trap near Pigeon River Fish and Wildlife Area in Lagrange County.

Number of confirmed bobcat reports in Indiana



Indiana Bat Winter Hibernacula Survey

Surveys of Indiana bat winter hibernacula are conducted in Indiana every two years to monitor the species' status and assess progress toward recovery. In January and February 1999, a total of 183,382 Indiana bats was counted in 24 caves. This figure represents a slight decline (348 bats) from that reported in 1997 but a 29 percent increase since 1987. Indiana's winter population remains relatively stable and now supports approximately half of all the Indiana bats in existence. In 1999, only five hibernacula contained 92 percent of the statewide population. Notable increases were found at Ray's Cave (60,236 bats, +17%), Wyandotte Cave (26,859 bats, +6%), Batwing Cave (10,125 bats, +37%), Coon Cave (6,206 bats, +30%), and Grotto Cave (4,363 bats, +79%). Declines were noted at Twin Domes Cave (59,775 bats, -11%), Jug Hole Cave (11,774 bats, -43%), and Parker's Pit (951 bats, -17%).

Management of Indiana Bat Winter Hibernacula

Nongame biologists continue to utilize various strategies to manage and protect important Indiana bat winter hibernacula. "*Indiana Bat Hibernating Colony*" warning signs, which define the seasonal closure period from 1 September to 30 April, are posted at 11 caves in southern Indiana. Continued use of remote electronic alarm systems appears to have reduced unauthorized visitations to the three caves

monitored since 1988. Other management activities include landowner outreach, preventive maintenance of bat gates, recording temperature and humidity conditions at select roost sites, and use of speloggers to monitor human visitation during the seasonal closure period. Nongame personnel also assisted Bat Conservation International with a multi-state study of temperature and humidity conditions at nearly 20 caves throughout the species' winter range. In 1999, data from 13 probes in five hibernacula in Indiana were downloaded to determine if roost microclimates are responsible for the continued decline of Indiana bats throughout their range.

Partnership projects

Status and distribution of darters in southwestern Indiana, with special emphasis on the spottail darter, an Indiana endangered species. James Bandoli, \$1991.00

Past surveys of Posey and Vanderburgh counties revealed at least five species of darters, including the state endangered spottail darter. The spottail darter's range in Indiana is restricted to the extreme southwestern part of the state. Past surveys indicated healthy populations at a few locations. Surveys during 1998 determined the current distribution of darters in Posey and Vanderburgh counties. Eight species of darters were collected during the survey. Results show darters more widely distributed than in previous surveys. Spottail darter population sizes and distribution indicate it continues to thrive in southwestern Indiana.

Survey of rare fishes including the longnose dace *Rhinichthys cataractae* (Valenciennes), slimy sculpin *Cottus cognatus* (Richardson), trout-perch *Percopsis omiscomaycus* (Walbaum), and longnose sucker *Catostomus catostomus* (Forster) in the nearshore zone of Lake Michigan. Thomas Simon, \$3924.00

Historically, the longnose dace, slimy sculpin, trout-perch and longnose sucker were relatively common along the nearshore zone of Lake Michigan. However, the current health of these species is unknown. The objectives of the study were to: 1) sample historical localities of these species in the Lake Michigan drainage, 2) sample nearshore zones along Lake Michigan and adjacent river reaches for unknown populations, 3) document the fish community at each

site sampled, and 4) document the spread of exotic species including the round and tubenose goby. Results of the survey included: longnose dace from Whiting (Lake County), Indiana Dunes National Lakeshore (Porter), Mt. Baldy (Porter), and the St. Joseph River (St. Joseph); longnose sucker from Whiting (Lake County), Indiana Dunes National Lakeshore (Porter), and Mt. Baldy (Porter); and trout-perch from Michigan City (LaPorte). Slimy sculpin were not collected during the sampling effort. Round gobies were collected from almost every station along the entire length of the Indiana shoreline of Lake Michigan.

Publications

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River otter released on the Blue River, February 1999

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